

Steps 4–6: Assess the Question, Act, and Answer Using POE

As always, begin by determining whether there is a Grab-a-Rule question.

You probably went straight to question 1. This is understandable since it uses the phrase “complete and accurate list.” However, if you noticed that the list focused only on the In column and skipped it, that is also understandable. On In/Out games, a question like this being a true Grab-a-Rule is hit or miss—sometimes it is and at other times, we need information about the Out column in order to finish it out. If you are ever unsure, dive into the question. Worst case scenario, you can’t get down to a single answer. If that occurs, mark the question number, work the Specific questions, and then come back and finish this one. The good news is that this question is in fact a Grab-a-Rule!

1. Which one of the following could be a complete and accurate list of the kinds of fruit the stand carries?

- (A) oranges, pears 
- (B) pears, tangerines 
- (C) oranges, pears, watermelons 
- (D) oranges, tangerines, watermelons 
- (E) kiwis, oranges, pears, watermelons 

Here's How to Crack It

Remember when assessing conditional clues to only look at the left side (sufficient factor) of the arrow to determine whether a clue is applicable.

Clue 1 says “if K....” Choices (A), (B), (C), and (D) do not have K, so they must be skipped—the rule simply doesn’t apply. Choice (E) does, so now check the full rule. P is also listed which violates rule 1, so eliminate it.

Clue 2 deals with if “~T....” While you might be able to use this rule, we recommend skipping it. Remember, the whole point of a Grab-a-Rule question is to apply the rules without deep thoughts or diagramming. All of the answers are In; therefore, clue 2 does not apply.

Clue 3 says “if O....” Check (A). W is missing, so eliminate it. The rule doesn’t apply to (B). Check (C), which is valid. Check (D), which is missing P, so eliminate it. Now look at clue 4. The rule doesn’t apply to (B), so skip it. The rule applies to (C), so check it. Choice (C) has neither F nor T; therefore, eliminate it. You are down to (B), so that must be the correct answer.

Step 3: Make Deductions and Size Up the Game

For In/Out games, always begin by looking for placeholder deductions. The key with these, as described in the lesson, is to find clues that create antiblocks in one of the columns. The placeholder will then go in the other column. The shortcut is to find single clues that have paired independent factors. Begin with clue 1. The independent factors $\neg P$ and $\neg K$ are paired because both are out. This clue creates an antiblock in the In column. Both P and K cannot be In at the same time. Therefore, the placeholder clue should be in the Out column.

Carries (In)	Out
	P/K

Clue 2 has the same pattern. K and T are paired independent factors since they are both In. Therefore, the placeholder should be placed in the In column for these two elements.

Carries (In)	Out
K/T	P/K

Clues 3 and 4 do not have paired independent factors, so no placeholder deductions can be made. At this point, you would look at multi-clue deductions, but you have a decision to make. Take a look at the first, second, and third clues. The third clue tells us that if O is In, then so are P and W ; the contrapositive of the first clue says that if P is In, then K is Out; and, finally, the second clue tells us that if K is Out, then P is In. In a case like this, it's possible to combine the clues together into a single "chain" leading from O to P to $\neg K$ to T . Similarly, this chain has a contrapositive— $\neg T$ to K to $\neg P$ to $\neg O$.

This is only one example of several such chains that can be made on this game, which is why you have a choice to make. In the end, by writing out the chain, you're primarily reproducing information you already have, but you do benefit by having it all in one place. The disadvantage of making these chain deductions is twofold. First, they can be time-consuming to find and write out; second, they clutter your page and make it more difficult to find information when you're working questions.

We recommend looking for placeholder deductions and moving on. The choice, however, is up to you. Some students benefit from spending a little bit more time focusing on the conditionals since doing so helps them size up the game better. A majority of students, though, spend too much time chaining them—time that could be better spent working through the questions. A good rule of thumb is that chain deductions are most useful on games that include a small number of relatively straightforward conditional clues. If there are a large number of conditionals, or if the conditionals strike you as complicated, it's usually best to keep your clue list as uncluttered as possible.

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Now move on to the Specific questions. Let's look at question 4.

4. If the stand carries no watermelons, then which one of the following must be true?

- (A) The stand carries kiwis. 
- (B) The stand carries at least two kinds of fruit. 
- (C) The stand carries at most three kinds of fruit. 
- (D) The stand carries neither oranges nor pears. 
- (E) The stand carries neither oranges nor kiwis. 

Here's How to Crack It

In/Out games can be frustrating to many students because of the flexibility of the elements and the general confusion caused by conditional clues. Control this by getting your pen moving. We told you at the beginning of the lesson that this should be your mantra. If you're not sick of hearing us say this, then you're not moving your pen enough!

Begin by symbolizing the new information, bringing down your deductions, and applying your clues. W is Out, so O must also be Out according to clue 3. Next, carry down your placeholder. You know that in addition to W and O, either P/K must be Out and T/K must be In. F has no rules at all that apply in this case.

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
④	$\frac{K}{T}$	$\frac{P}{K}$ WO

This is a Must Be True question. We have gone as far as the rules will take us, so let's see if we already have the answer choice in our diagram. Choice (A) could be false based on our placeholder, so eliminate it. We know from our In placeholder that the stand always has at least one piece of fruit. If you're not sure if the stand carries at least two, hold on to this one. Never eliminate an answer choice on a Must Be True if you aren't 100% sure it's wrong. Choice (C) says that the stand carries at most three kinds of fruit. This also seems plausible since we have six fruits, three of which must be Out. Again, if you're not positive, let's leave this one for now. We know that O must be Out, but our placeholder shows us that either P or K can be Out. Neither of these elements is forced, so both (D) and (E) can be

false. Get rid of them. We are now down to at least two versus at most three. Be very careful when you falsify these answer choices. If you are able to put two fruit In the stand and four Out, both these answer choices would still be valid. If you *can't* put three fruit Out, then (C) is gone. If you can put *only one* fruit In and the other five Out, then (B) is eliminated.

Let's try to break (B). We know that K or T must be In. We also know that P or K must be Out. Since K is the overlap, let's make that the only element in. Quickly write the other five elements in the Out column and then check your rules (this is more efficient).

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF

This doesn't break any rules. Therefore, the stand does not have to carry "at least two" kinds of fruit. Eliminate (B); (C) is the right answer.

Let's keep going.

5. If the stand carries watermelons, then which one of the following must be false?

- (A) The stand does not carry figs. 
- (B) The stand does not carry tangerines. 
- (C) The stand does not carry pears. 
- (D) The stand carries pears but not oranges. 
- (E) The stand carries pears but not tangerines. 

Here's How to Crack It

Begin by placing W in the In column and deducing any new information that must be true based on the question. Since W is In either F/T must be In. Now carry down your deductions. We have at least one fruit Out and at least two In. Be careful here! Since the element T is in both placeholders, we can be sure only one more element will be In.

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF
(5)	W $\frac{F}{T}$	$\frac{P}{K}$

Again, check the answers quickly to see if we have identified any answer choice that must be false. If nothing jumps out at you, eliminate what you can based upon rules and deductions. Next, it is time to stop thinking and start diagramming. Apply clue 4 first, but pick one of the two elements. Let's place F In and T Out. This forces K into our In placeholder, in turn forcing P into the Out placeholder. Our last element, O, is also forced out due to clue 3. Now eliminate any answer choice that we have proven could be true. On our diagram, T, P, and O can all be Out. Eliminate (B) and (C).

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF
(5)	W $\frac{F}{T}$	$\frac{P}{K}$
(5)	WFK	PTO

Now, try a different approach. W is in from the question, but this time, put T In with F Out. Next, let's try focusing on our independent factors, since challenging questions often test your understanding of these. Notice in clue 3 that P and W In and ~O are independent. Let's diagram that, so put P in with W and O out. This forces K out to fill our placeholder.

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF
(5)	$W \frac{F}{T}$	$\frac{P}{K}$
(5)	WFK	PTO
(5)	WTP	KFO

Go back to the questions and continue using POE on any answer choice that could be true. F is Out, so eliminate (A). P is In while O is Out, so eliminate (D). Choice (E) is the only choice remaining, so select it.

Notice that (D) specifically tests your understanding of independent and dependent factors. When you are dealing with In/Out questions and have many answer choices to eliminate, proactively look for independent factors that confuse many students and apply those to your diagram. You'll be pleased with how often this gets rid of tricky answers!

At this point, we are done with Specific questions and should move on to General questions. Now, some of you may be saying, "wait a moment...question 6 begins with *If* as well!" Remember, all that glitters is not gold. Way back in the first lesson, we described four types of questions. The fourth type was Complex questions. These are any questions that alter rules. Question 6 says "If the condition... is suspended...." This question eliminates a rule and is thus a Complex question. It should be tackled last!

2. Which one of the following could be the only kind of fruit the stand carries?

- (A) figs
- (B) oranges
- (C) pears
- (D) tangerines
- (E) watermelons

Here's How to Crack It

This question asks which of the following answers could be the only fruit In. Remember to look at your deductions. We have a placeholder that tells us that either K or T must always be In. Therefore, one of these two fruits must be the answer. Eliminate any answer choice that is not K or T. The answer is (D).

3. Which one of the following CANNOT be a complete and accurate list of the kinds of fruit the stand carries?

- (A) kiwis, tangerines
- (B) tangerines, watermelons
- (C) figs, kiwis, watermelons
- (D) oranges, pears, tangerines, watermelons
- (E) figs, kiwis, oranges, pears, watermelons

Here's How to Crack It

This question asks us which of the five answers is the only one that is invalid. In other words, it is either incomplete or breaks a rule. Begin by looking at your deductions. Start with the In column. We know that either T or K must be In. Check the answers. Unfortunately, they all include either T or K or both. Next, look at the Out column. We know that either P or K or both must be Out. Since each of the answers is a “complete and accurate list,” we can assume that any fruit not on the list is Out. In (A), P is Out; both are Out in (B); P is Out in (C); K is Out in (D); but both are In in (E). Therefore, this violates a rule and cannot be an accurate list. Choice (E) is the credited response, so select it.

If you struggle with In/Out games, there is an alternative approach to these complete list questions. Simply write out the answer choice exactly as stated. Then place every remaining element Out. Finally, check the rules and apply POE as needed for the question stem. This can be time-consuming, so use this as a last resort. However, it is good practice for understanding In/Out game logic.

Now, onward to our final question. The difficulty of complex questions can vary widely. The most challenging of these ask which answer choice would have the same effect on a game as one of the rules. In general, the more the complex question changes your deductions, the harder it is.

6. If the condition that if the fruit stand does not carry tangerines then it does carry kiwis is suspended, and all other conditions remain in effect, then which one of the following CANNOT be a complete and accurate list of the kinds of fruit the stand carries?

- | | | |
|-----|-----------------------------------|---|
| (A) | pears |  |
| (B) | figs, pears |  |
| (C) | oranges, pears, watermelons |  |
| (D) | figs, pears, watermelons |  |
| (E) | figs, oranges, pears, watermelons |  |

This question eliminates clue 2. As a result, our placeholder in the In column must also be removed. Therefore, the only deduction we have is the P/K placeholder in the Out column. Since this clue is removed, there are no additional deductions to be made.

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF
(5)	W $\frac{F}{T}$	$\frac{P}{K}$
(5)	WFK	PTO
(5)	WTP	KFO
Clue Shelf		$\frac{P}{K}$
(6)		

The fastest way to check the answer on complex questions is to find new deductions; however, none are forthcoming. This question also asks for an answer choice that is either incomplete or violates a rule in some way. If you are struggling with these, just plug them into your diagram! Questions that use the phrase “complete and accurate” can be diagrammed with speed. We’ll show you how quick this can be. Start with (A). If P is the complete list of fruit, then F, K, O, T, and W must be Out.

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF
(5)	W $\frac{F}{T}$	$\frac{P}{K}$
(5)	WFK	PTO
(5)	WTP	KFO
Clue Shelf		$\frac{P}{K}$
(6)		
(6A)	P	FKOTW

Remember that clue 2 no longer applies. Rules 1, 3, and 4 are not violated, so get rid of (A). Now, repeat the process with (B). F and P make the complete list, so put K, O, T, and W out and check the rules.

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF
(5)	W $\frac{F}{T}$	$\frac{P}{K}$
(5)	WFK	PTO
(5)	WTP	KFO
Clue Shelf		$\frac{P}{K}$
(6)		$\frac{P}{K}$
(6A)	P	FKOTW
(6B)	PK	KOTW

No rules are violated, so (B) is Out. Once more with (C)! O, P, and W are In, so F, K, and T are Out. However, this violates clue 4. Therefore, this cannot be a complete list. Choice (C) is correct.

FKOPTW	Carries (In)	Out
Clue Shelf	$\frac{K}{T}$	$\frac{P}{K}$
(4)	$\frac{K}{T}$	$\frac{P}{K}$ WO
(4B)	K	PWOTF
(5)	W $\frac{F}{T}$	$\frac{P}{K}$
(5)	WFK	PTO
(5)	WTP	KFO
Clue Shelf		$\frac{P}{K}$
(6)		$\frac{P}{K}$
(6A)	P	FKOTW
(6B)	PK	KOTW
(6C)	OPW	EKT

This concludes the In/Out game. At this point, you have now been introduced to, and worked through, all the major game types. You have also been exposed to in-depth discussions of POE, deductions, clue symbolization, and the approach. The next lesson will discuss how the LSAT will often take these basic game patterns and twist them into more complex forms. As you dive into the next lesson, keep in mind that you should be building upon the basics.

LESSON 5: TWISTS, TURNS, AND GAME RANKING

This is it! Believe it or not, there are only a few more things you need to focus on as you advance toward a mastery of the Games section. You have been shown the basic approach to games and used it on four different examples. You have been introduced to all the major games patterns: Ordering, Grouping, and In/Out. You have also seen and studied POE skills, clue symbolizations, and deductions. You have seen some level of complexity by playing a 2D Ordering game. This lesson will focus on the twists that the LSAT test-writers can introduce into these game patterns.

In order to master the LSAT, or any standardized exam for that matter, you need to develop and hone two complementary skills. These two skills appear contrary at first, but they really do work well together. The two skills are consistency and flexibility.

The reason that many students struggle with the LSAT is that they approach each question as unique. As we have hopefully demonstrated through the previous lessons in this chapter, the LSAT Games section is anything but unique. The games and the questions are highly patterned. If you focus on the logic behind the methods we teach, you will notice that at its core, we have been teaching you to approach every single game and every single question the same way. The specifics of the approach, such as diagramming or POE, can be adapted to the question type; however, the general approach is always true.

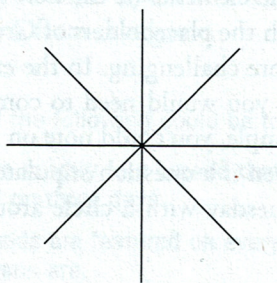
This is undoubtedly a challenging test. The test-writers are highly skilled at taking these familiar patterns and masking them in order to make them harder. This is where flexibility comes in. Now that you have made significant strides toward mastering the general techniques, you will want to build in the flexibility needed to adapt the approach to any situation the LSAT throws at you. This lesson will discuss various ways in which games can be changed from the patterns discussed previously. Make sure you take the time both to study the possible changes and to focus on how the solutions we provide are similar to the major game types that you know.

Games Technique: Draw the Right Diagram

A common variation of games is arranging elements spatially. Any setup that provides a specific arrangement of the slots for the elements could be a spatial setup. Let's look at an example.

Eight vegetables—asparagus, broccoli, carrots, eggplant, green beans, kale, legumes, and spinach—are being placed around a circular buffet table.

This seems quite different from the earlier examples that we have investigated here. However, if this was a straight table, these vegetables would be placed in some sort of *order*. In other words, this is an Ordering game. The difference with this one and earlier Ordering games is that this is circular. The simplest way to deal with any spatial arrangement is to draw a template instead of a grid diagram. For the example above, we would draw four intersecting lines and would place our elements at the ends of each line. This would allow us to see what is next to each dish and which dishes were directly across the buffet from each other.



We'll fill in the first template with all the concrete information we have and any deductions we come up with, effectively like a clue shelf. For each question we work, we'll draw a new diagram, carry over our deductions, and enter the new information from the question. You might think that redrawing the diagram for each question will be too time-consuming, but if you keep it simple, you can create one quickly and then have a concrete space in which to work through the question.

Occasionally, the LSAT folks will surprise you with their generosity and will actually tell you how to draw the diagram. By all means, use their description. Copy it as many times as you need to, but draw it more simply if necessary.

Games Technique: 2D and 3D Games

As we discussed in Game 2 (page 176), Ordering games can have a second dimension added to them that ups their difficulty level. On that game, we separated the game into two rows on our diagram that allowed us to keep track of the puppies and kittens separately.

It will probably come as no surprise to you, but every major game type can have 2D variants. For example, our grouping game (page 200) had two dogs being placed with new owners on subsequent days. What if, in addition to the different types of dogs, the games told us that the owners lived in either an apartment building or a house? What types of new clues would the game give you? How would this twist affect the questions and answers? What about the difficulty level of the game?

Likewise, our In/Out game had us placing fruit in a stand. A 2D variant could ask us to categorize the fruit as either \$1 or \$2 per item. The same questions could be asked of this variation. What would this twist do to the game?

Finally, consider the 2D Ordering game about kittens and puppies. What if the game also stipulated that at least once each week, a breed of pet would be placed on sale? How would this information affect the game?

You need to adapt your diagram to cope with all the information in the setup and clues. Remember that the entire point of diagramming is to make your life simple by organizing and managing the games information. Many 2D games are fairly straightforward twists. They can be dealt with by adding a second row to the diagram, adding subscripts to the elements (if the new information is pre-assigned), or by adding notes underneath the placeholders of Grouping and Ordering games. Other information can be more challenging. In the example above about putting at least one pet type on sale, you would need to come up with some method of symbolizing the sale. For example, you could note on your clue shelf that a circled element would be on sale. Then if a question stipulated that H were on sale Tuesday, you would put H on Tuesday with a circle around it and apply your rules accordingly.

The bottom line is that whenever the LSAT test-writers throw a curveball at you, do not focus on the differences. Instead, focus on the similarities with games that you are already know. Then adapt your diagram so that it will help you keep track of all the new, twisted information.

Games Technique: Question and Deduction Driven Games

As we have said in earlier lessons, not every game has deductions. In some games, the number of deductions you can make is severely limited. These games we have nicknamed Question Driven games. Question Driven games typically have only one (or even zero) deductions that can be made. They also typically have a majority of Specific questions. These games have to be played over and over again. The trick with this type of game is to not panic when no deductions are forthcoming. Hold to the systematic approach that we have shown you. Be prepared to play several answer choices on the first couple of questions that you work in order to get down to a single answer. This can be challenging since you have only a finite amount of time, but if you keep moving, you will eventually start to see patterns emerging. You will also quickly generate a large amount of work that will help you on later questions.

On the other end of the spectrum are Deduction Driven games. If you begin a game and notice that there are very few (sometimes only 1) Specific questions and the rest are General, then take a few extra minutes to note deductions. These games almost always have some very large deductions that limit the game to only one or two possible distributions. Other things to look for on games like this are several large block clues, several connected range clues, or some sort of spatial distribution that prevents the game from being too flexible. The strategy here is to invest extra time finding deductions so that you don't have to check individual answers on those General questions.

Games Technique: Twisted Conditionals

Based on the fact that we have already discussed conditional statements in two previous lessons, it should come as no surprise that conditionals can be even more complex than what we have looked at. Sometimes conditional clues can be masked with abstract language. Conditional clues can be linked with other clue types, such as block or range clues. Finally, conditionals can include extra language that makes them challenging to diagram. Let's look at a few examples. The first should be familiar to you since it was from the game we played in Lesson 2. Let's look again at question 5 from that game.

5. Which one of the following could be true?

- (A) There are exactly four breeds that are each featured on three days. 
- (B) Greyhounds are featured on every day that Himalayans are. 
- (C) Himalayans are featured on every day that Greyhounds are. 
- (D) Himalayans are featured on every day that Rottweilers are not. 
- (E) Rottweilers are featured on every day that Himalayans are not. 

- (B) $H \rightarrow G$
- (C) $G \rightarrow H$
- (D) $\sim R \rightarrow H$
- (E) $\sim H \rightarrow R$

This time, let's focus on parsing the language of the answer choices. Let's start with (B). This answer says that G is featured every time that H is. Many students wrongly conclude this means that G and H are always together. However, think in terms of sufficient and necessary factors. Which pet location provides sufficient information to know the other, the G or the H? It is the H. Therefore, this answer choice is actually stating $H \rightarrow G$. G is independent, so it can occur on other days, but it will always be with an H. Let's look at (C) now. Now that you know these are conditionals, you can see how these answer choices are distinct. This answer has H as the independent and should be diagrammed as $G \rightarrow H$. These answers in reality are conditional statements that are twisted by using different language than the easy-to-parse if...then phrasing. Why don't you try your hand at diagramming the statements in (D) and (E) before moving on.

Conditional statements can also include aspects of block or range clues. Consider the following examples.

If A is first, then B is sometime before C.

This clue is clearly a conditional statement. However, it also reads like a range clue. Start by diagramming it as normal with the “if” statement on the left side. Then take the mechanical contrapositive.

$$\begin{aligned} A_1 &\rightarrow B \dots C \\ B \dots C &\rightarrow \sim A_1 \end{aligned}$$

Once you’ve done this, you can determine based on the game and diagram whether it is valid to make additional deductions, such as $C \dots B$.

Conditionals can also include block clues.

Every A also has a B.

Words like “all” and “every” are all-inclusive and therefore are sufficient to know what comes next. Therefore, they go on the left side of the arrow. They can be diagrammed as follows.

$$\boxed{A \rightarrow AB}$$

The contrapositive of this statement is a little tricky. A mechanical version would read “if I don’t have an A and B block, then I don’t have A.” However, let’s think about this in a little more detail. Any block clue can also be read as A and B together. When you negate, “and” becomes “or,” so a less mechanical contrapositive would be if $\sim A$ or $\sim B \rightarrow \sim A$. Logically, if you don’t have A, then you don’t have A (duh!). Therefore, the true contrapositive of this statement is simply

$$\sim B \rightarrow \sim A$$

Finally, conditional statements can include strange phrasings that combine parts of other conditional statements. Consider the phrase “if, but only if...” For example, a clue could read

A is on committee 1 if, but only if, B is also on committee 1.

Each statement separately would be pretty easy to diagram. “A is on committee 1 if B is also on committee 1” or “A is on committee 1 only if B is on committee 1.” By combining these two phrases into a single statement, the LSAT is telling you that each element is both a sufficient and necessary factor. You can either diagram this as two separate clues, or you can treat them as a single clue with an arrow moving both directions.

$$\begin{aligned} A &\leftrightarrow B \\ \sim A &\leftrightarrow \sim B \end{aligned}$$

Finally, consider the following example of a highly complex conditional statement.

If Stone evaluates a proposal, then Uqbar does not also evaluate that proposal, unless Stone evaluates proposal K.

The first half of this clue seems to be another straightforward conditional statement. The second half introduces a twist. There, the “unless...” phrase lets you know that this rule does not apply when S is evaluating K, but it does apply on all other proposals.

APPLY WHAT YOU’VE LEARNED

Now it’s time to put everything you’ve learned in this section about twisted games into practice on the next game. We’re not going to tell you anything more about this game. Your job is to identify the similarities between this game and previous ones that you’ve worked. Then identify how the twisted information affects the game and how you should adapt your diagram. Do your best on this one. We don’t recommend timing yourself, as this will likely be a challenging game for you.

After this game and the self-evaluation worksheet, you will find one more technique on how to determine the best order of games to work. Good luck!

GAME 5

Game 5 and its questions are from PrepTest 32, Section 3, Questions 1–6.

Of the eight students—George, Helen, Irving, Kyle, Lenore, Nina, Olivia, and Robert—in a seminar, exactly six will give individual oral reports during three consecutive days—Monday, Tuesday, and Wednesday. Exactly two reports will be given each day—one in the morning and one in the afternoon—according to the following conditions:

Tuesday is the only day on which George can give a report.

Neither Olivia nor Robert can give an afternoon report. If Nina gives a report, then on the next day Helen and Irving must both give reports, unless Nina's report is given on Wednesday.

1. Which one of the following could be the schedule of students' reports?

- (A) Mon. morning: Helen; Mon. afternoon: Robert
Tues. morning: Olivia; Tues. afternoon: Irving
Wed. morning: Lenore; Wed. afternoon: Kyle
- (B) Mon. morning: Irving; Mon. afternoon: Olivia
Tues. morning: Helen; Tues. afternoon: Kyle
Wed. morning: Nina; Wed. afternoon: Lenore
- (C) Mon. morning: Lenore; Mon. afternoon: Helen
Tues. morning: George; Tues. afternoon: Kyle
Wed. morning: Robert; Wed. afternoon: Irving
- (D) Mon. morning: Nina; Mon. afternoon: Helen
Tues. morning: Robert; Tues. afternoon: Irving
Wed. morning: Olivia; Wed. afternoon: Lenore
- (E) Mon. morning: Olivia; Mon. afternoon: Nina
Tues. morning: Irving; Tues. afternoon: Helen
Wed. morning: Kyle; Wed. afternoon: George

2. If Kyle and Lenore do not give reports, then the morning reports on Monday, Tuesday, and Wednesday, respectively, could be given by

- (A) Helen, George, and Nina
- (B) Irving, Robert, and Helen
- (C) Nina, Helen, and Olivia
- (D) Olivia, Robert, and Irving
- (E) Robert, George, and Helen

3. Which one of the following is a pair of students who, if they give reports on the same day as each other, must give reports on Wednesday?

- (A) George and Lenore
- (B) Helen and Nina
- (C) Irving and Robert
- (D) Kyle and Nina
- (E) Olivia and Kyle

4. If George, Nina, and Robert give reports and they do so on different days from one another, which one of the following could be true?

- (A) Helen gives a report on Wednesday.
- (B) Nina gives a report on Monday.
- (C) Nina gives a report on Tuesday.
- (D) Olivia gives a report on Monday.
- (E) Robert gives a report on Wednesday.

5. If Kyle gives the afternoon report on Tuesday, and Helen gives the afternoon report on Wednesday, which one of the following could be the list of the students who give the morning reports on Monday, Tuesday, and Wednesday, respectively?

- (A) Irving, Lenore, and Nina
 (B) Lenore, George, and Irving
 (C) Nina, Irving, and Lenore
 (D) Robert, George, and Irving
 (E) Robert, Irving, and Lenore



6. If Helen, Kyle, and Lenore, not necessarily in that order, give the three morning reports, which one of the following must be true?

- (A) Helen gives a report on Monday.
 (B) Irving gives a report on Monday.
 (C) Irving gives a report on Wednesday.
 (D) Kyle gives a report on Tuesday.
 (E) Kyle gives a report on Wednesday.



Step 2: Symbolize the Clues and Double-check

Whenever there is a *if-then* in the game, you must be extra careful when you are listing the clues. Focus on the wording of each clue. Remember, a *if-then* is a *conditional* or *rule*. The ballgame analogy of the ballgame is that the *if* is the first clue. This clue is the *if* and gives a *rule* or *condition*. Notice that the clue does not say that G must exist only Monday. The clue merely implies that if G is giving a report, then the report must be on Monday. Therefore, G can also be on Tuesday or Oct. This is a *conditional* clue and can be drawn above the diagram.

The next clue is a *conditional* clue that provides a *rule* or *condition*. This can also be symbolized on the diagram. However, since it deals with the second condition, it should go on the *if* or the *then* side of the diagram.

Self-Assessment

Steps 1–3 Assessment

1. Which one of the following could be the schedule of students' reports?

- (A) Mon. morning: Helen; Mon. afternoon: Robert; Tues. morning: Olivia; Tues. afternoon: George; Wed. morning: Leland; Wed. afternoon: Kyle
- (B) Mon. morning: Irving; Mon. afternoon: Olivia; Tues. morning: Helen; Tues. afternoon: Kyle; Wed. morning: Nina; Wed. afternoon: Leland
- (C) Mon. morning: Leland; Mon. afternoon: Helen; Tues. morning: George; Tues. afternoon: Olivia; Wed. morning: Robert; Wed. afternoon: Kyle
- (D) Mon. morning: Nina; Mon. afternoon: Robert; Tues. morning: Robert; Tues. afternoon: Irving; Wed. morning: Olivia; Wed. afternoon: Leland
- (E) Mon. morning: Olivia; Mon. afternoon: Nina; Tues. morning: Irving; Tues. afternoon: Helen; Wed. morning: Kyle; Wed. afternoon: George

2. If Kyle and Leland do not give reports, then the morning reports on Monday, Tuesday, and Wednesday, respectively, could be given by

- (A) Helen, George, and Nina
- (B) Irving, Robert, and Leland
- (C) Nina, Helen, and Olivia
- (D) Olivia, Robert, and Irving
- (E) Robert, George, and Leland

3. If Kyle gives the afternoon report on Tuesday and Helen gives the afternoon report on Wednesday, which one of the following could be the list of the students who give the morning reports on Monday, Tuesday, and Wednesday, respectively?

- (A) Irving, Leland, and Nina
- (B) Leland, George, and Irving
- (C) Nina, Irving, and Leland
- (D) Robert, George, and Irving
- (E) Robert, Irving, and Leland

4. If George, Nina, and Robert give reports and they do so on different days from each other, which one of the following could be true?

- (A) Helen gives a report on Wednesday.
- (B) Kyle gives a report on Monday.
- (C) Nina gives a report on Tuesday.
- (D) Olivia gives a report on Monday.
- (E) Robert gives a report on Wednesday.

Cracking Game 5

Step 1: Diagram and Inventory

As we warned, this game was going to have a few twists to it. Hopefully, though, you noticed that this seems most similar to a 2D Ordering game. There are three consecutive days (which have a natural order). Two people will be giving a report each day—once in the A.M. and once in the P.M.—making the second dimension that we need to keep track of. The first twist to this game is that we have eight people, but only six speakers. Therefore, we also need to add an “Out” column to keep track of those who will not be speaking at all. Your diagram should look as follows.

GHIK LNOR		M	T	W	Out
Clue	--	AM	--	--	--
Shelf	--	PM	--	--	--

Step 2: Symbolize the Clues and Double-check

Whenever there is a twist to the game, you must be extra careful when you symbolize the clues. Focus on the wording of each clue and look for markers like “must” or “may” that indicate rigidity or flexibility in the clue. Let’s look at the first clue. This clue says that G can give a report only on Tuesday. Notice that the clue does *not* say that G must speak only Tuesday. The clue merely implies that *if* G is giving a report, then that report must be on Tuesday. Therefore, G can either be on Tuesday or Out. This is a concrete clue and can be drawn above the diagram.

GHIK LNOR		M	T	W	Out
Clue	--	AM	--	--	--
Shelf	--	PM	--	--	--

G
↙ ↘

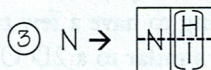
The next clue is a fairly straightforward concrete clue providing negative information. This can also be symbolized on the diagram. However, since it deals with the second dimension, it should go to the side of the diagram.

GHIK LNOR		M	T	W	Out
Clue	--	AM	--	--	--
Shelf	--	PM	--	--	--

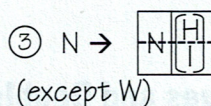
G
↙ ↘

~O~R

The final clue is the second major twist to the game. It is a twisted conditional. The clue first provides sufficient information that if N speaks, then both H and I speak the next day. What we don't know is which speaks in the morning or the afternoon. However, let's start by diagramming the conditional.



Note that we wanted to include as much information as possible. Therefore, on the left, we put $N \rightarrow$ since that is sufficient information. The right side is more challenging. However, the clue forms a block. We put N straddling the line between A.M. and P.M. to indicate either, and then put H and I in the next column. The final piece of information we included was to put a set of parentheses around H and I indicating that they could be in either position. This looks pretty good, but now we need to consider the second half of the clue. This clue says that the rule applies unless N is on Wednesday. Remember that if a clue is hard/impossible to symbolize, then use crib notes. Let's just add the phrase "except W" to our symbol to indicate that this rule doesn't apply when $N = W$.



Finally, with super complex conditionals, it may be more confusing and time-consuming to do the contrapositive. As a result, we will skip this step. It is hard to determine when to skip the contrapositive. In general, this shouldn't be done. However, if you can't simply flip and negate the sides, and looking at the clue doesn't help you see how to do it, then skip it.

Step 3: Make Deductions and Size Up the Game

As discussed in an earlier lesson, concrete clues can be used to make deductions, but it is usually not worth the time to do so. For example, if G can only be On T or Out, then G cannot be on M or W. But this is already suggested by our symbolization. Likewise, if neither O nor R can be in the P.M., then they are either in the A.M. or Out. Again, this information is included in the symbol. Finally, with the conditional clue, we already discussed why we shouldn't take the contrapositive, which is the primary deduction for conditionals. None of the elements are mentioned in more than one clue either. If you are really unsure about missing something, you can always glance at the questions. Notice that of the six questions, five of them are Specific. As discussed in the lesson, this indicates a question-driven game with few deductions.

One thing that can be deduced is the interaction between clues 1 and 3. Clue three completely fills up a day. Therefore, if $N = M$, then G must be Out. This can be symbolized as follows.

$$N_m \rightarrow G_{out}$$

$$G \rightarrow \sim N_m$$

Even though this isn't a specific deduction and starts with an "if," it is still pretty powerful since only two elements can be Out. Despite a lack of specific deductions, sizing up the game is always beneficial. There are several limiting elements here. Specifically, N is the most powerful element in the game since its location on either M or T fills up half the diagram. Likewise, O , R , and G , if placed, are going to limit the location of various elements. We know nothing about elements L and K , so these will be the most flexible of the elements.

Steps 4–6: Assess the Question, Act, and Use Process of Elimination

Question 1 appears to be a Grab-a-Rule, so let's dive into that one.

1. Which one of the following could be the schedule of students' reports?

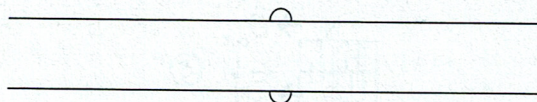
- (A) Mon. morning: Helen; Mon. afternoon: Robert
Tues. morning: Olivia; Tues. afternoon: Irving
Wed. morning: Lenore; Wed. afternoon: Kyle 
- (B) Mon. morning: Irving; Mon. afternoon: Olivia
Tues. morning: Helen; Tues. afternoon: Kyle
Wed. morning: Nina; Wed. afternoon: Lenore 
- (C) Mon. morning: Lenore; Mon. afternoon: Helen
Tues. morning: George; Tues. afternoon: Kyle
Wed. morning: Robert; Wed. afternoon: Irving 
- (D) Mon. morning: Nina; Mon. afternoon: Helen
Tues. morning: Robert; Tues. afternoon: Irving
Wed. morning: Olivia; Wed. afternoon: Lenore 
- (E) Mon. morning: Olivia; Mon. afternoon: Nina
Tues. morning: Irving; Tues. afternoon: Helen
Wed. morning: Kyle; Wed. afternoon: George 

Here's How to Crack It

Begin with rule 1. Choice (E) has G on W , so eliminate it.

Rule 2 discusses R and O . Choice (A) has R in the p.m., so eliminate it. Choice (B) has O in the p.m., so get rid of that one as well.

Finally, look at rule 3. Remember with conditionals to look only at the left side. Choice (C) doesn't have an N so the rule doesn't apply. Choice (D) has N on M, but H is also on M, so eliminate (D). The answer is (C).



2. If Kyle and Lenore do not give reports, then the morning reports on Monday, Tuesday, and Wednesday, respectively, could be given by

- (A) Helen, George, and Nina
- (B) Irving, Robert, and Helen
- (C) Nina, Helen, and Olivia
- (D) Olivia, Robert, and Irving
- (E) Robert, George, and Helen

Here's How to Crack It

This question tells us the two elements that are Out, so we know that everyone else must be In. Begin by diagramming the new information. Now consider the remaining elements and what we learned when we sized up the game. O and R are highly restrictive and both are In. Furthermore, they must both be placed in the A.M. At this point, you can go straight to the answer choices and POE. Since O and R must be in the A.M., the correct answer must include both of these. Eliminating any answer that doesn't include O and R gets rid of (A), (B), (C), and (E). Therefore, the correct answer must be (D).

	GHIK LNOR	M	T	W	Out
Clue	- - -	-	-	-	-
Shelf	~O~R	-	-	-	-
	O→R→	-	-	-	-
②	- - -	-	-	-	L K
	~O~R	-	-	-	-

Let's do another. Not all Specific questions have the same difficulty. Choose ones that provide highly specific information. Let's look at question 5.

5. If Kyle gives the afternoon report on Tuesday, and Helen gives the afternoon report on Wednesday, which one of the following could be the list of the students who give the morning reports on Monday, Tuesday, and Wednesday, respectively?

- (A) Irving, Lenore, and Nina
- (B) Lenore, George, and Irving
- (C) Nina, Irving, and Lenore
- (D) Robert, George, and Irving
- (E) Robert, Irving, and Lenore

Here's How to Crack It

Begin by drawing a new row on your diagram and put in the new information. We know that since H is on W, the only possible locations for N are fairly limited. Let's try N on T. This forces I on W. Since T is now full, G is Out. Either O or R must be M A.M., so L is M P.M.

	GHIK				
	LNOR	M	T	W	Out
Clue	---				
Shelf	~O~R				--
②	O→R→				
	~O~R				<u>L</u> <u>K</u>
⑤	---	^{O/R} L	N K	I H	G ^{O/R}

Now check your answers for the possibility of O/R...N...I. This combination is not there, so let's try again. Let's try N being on W A.M. There's only one answer choice with N in the A.M., so let's just try plugging in (A).